

CLAIMS

1. Cosmetic composition comprising a dispersion of particles of a grafted acrylic polymer in a liquid fatty phase, the said grafted polymer being obtainable by polymerizing at least one acidic ethylenic monomer, at least one non-acidic acrylic monomer and at least one macromonomer.
2. Composition according to the preceding claim, characterized in that the grafted acrylic polymer comprises an acrylic skeleton which is insoluble in the said liquid fatty phase and side chains bonded covalently to the said skeleton and soluble in the said liquid fatty phase.
3. Composition according to Claim 1 or 2, characterized in that the grafted acrylic polymer is dispersed in the absence of additional stabilizer on the surface of the particles of the grafted polymer.
4. Composition according to any one of the preceding claims, characterized in that the grafted acrylic polymer in dispersion is obtainable by free-radical polymerization in an organic polymerization medium:
 - of at least one acidic ethylenic monomer, at least one non-acidic acrylic monomer and, optionally, at least one additional, non-acidic, non-acrylic, vinyl monomer, to form an insoluble skeleton; and
 - of at least one macromonomer containing a

polymerizable end group for forming side chains, the said macromonomer having a weight-average molecular mass of greater than or equal to 200, the amount of polymerized macromonomer representing from 0.05% to 20% by weight of the polymer.

5 5. Composition according to any one of the preceding claims, characterized in that the acidic ethylenic monomer is selected from (meth)acrylic monomers comprising at least one carboxylic, phosphoric or sulfonic acid function, non-(meth)acrylic vinyl monomers comprising at least one carboxylic, phosphoric or sulfonic acid function, and salts thereof.

 6. Composition according to any one of the preceding claims, characterized in that the acidic ethylenic monomer is selected from (meth)acrylic acid, acrylamidopropanesulfonic acid, crotonic acid, maleic acid, maleic anhydride, itaconic acid, fumaric acid, vinylbenzoic acid, vinylphosphoric acid, and salts thereof.

20 7. Composition according to any one of the preceding claims, characterized in that the acidic ethylenic monomer is (meth)acrylic acid.

 8. Composition according to any one of the preceding claims, characterized in that the acidic ethylenic monomer is present in an amount ranging from 5% to 80% by weight, relative to the total weight of the polymer, preferably ranging from 10% to 70% by

weight and preferentially ranging from 15% to 60% by weight.

9. Composition according to any one of the preceding claims, characterized in that the acidic
5 ethylenic monomer comprises a principal acidic monomer selected from (meth)acrylic acid and optionally an additional acidic monomer different from (meth)acrylic acid, and salts thereof.

10. Composition according to the preceding
10 claim, characterized in that the additional acidic monomer is selected from acrylamidosulfonic acid, crotonic acid, maleic acid, maleic anhydride, itaconic acid, fumaric acid, vinylbenzoic acid, vinylphosphoric acid, and salts thereof.

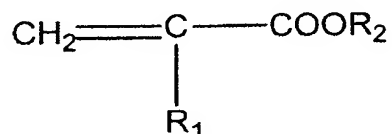
15 11. Composition according to Claim 9 or 10, characterized in that the (meth)acrylic acid is present in an amount of at least 5% by weight, relative to the total weight of the polymer, in particular ranging from 5% to 80% by weight, preferably at least 10% by weight,
20 in particular ranging from 10% by weight to 70% by weight, preferentially at least 15% by weight, in particular ranging from 15% to 60% by weight.

12. Composition according to any one of Claims 9 to 11, characterized in that the additional
25 acidic monomer is present in an amount ranging from 0.1% to 20% by weight, relative to the total weight of the polymer, preferably ranging from 5% to 15% by

weight.

13. Composition according to any one of the preceding claims, characterized in that the non-acidic acrylic monomer is selected from, alone or in a mixture, the following monomers, and their salts:

-(i) the (meth)acrylates of formula:

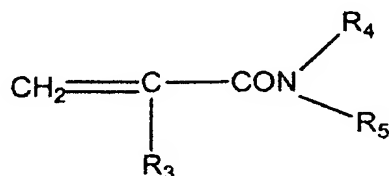


in which:

- R₁ denotes a hydrogen atom or a methyl group;
- 10 - R₂ represents a group selected from:
 - a linear or branched alkyl group containing from 1 to 6 carbon atoms, the said group possibly comprising in its chain one or more heteroatoms selected from O, N and S; and/or possibly comprising
 - 15 one or more substituents selected from -OH, halogen atoms (F, Cl, Br or I) and -NR'R'' with R' and R'', which may be identical or different, selected from linear or branched C₁-C₄ alkyls; and/or possibly being substituted with at least one polyoxyalkylene group, in particular
 - 20 with polyoxyethylene and/or polyoxypropylene, the said polyoxyalkylene group consisting of a repetition of 5 to 30 oxyalkylene units;
 - a cyclic alkyl group containing from 3 to 6 carbon atoms, the said group possibly comprising in its
 - 25 chain one or more heteroatoms selected from O, N and S,

and/or possibly comprising one or more substituents selected from OH and halogen atoms (F, Cl, Br, I);

-(ii) the (meth)acrylamides of formula:



5 in which:

- R₃ denotes a hydrogen atom or a methyl group;
 - R₄ and R₅, which may be identical or different, represent a hydrogen atom or a linear or branched alkyl group containing from 1 to 6 carbon atoms, which may
 - 10 comprise one or more substituents selected from -OH, halogen atoms (F, Cl, Br or I) and -NR'R'' with R' and R'', which may be identical or different, selected from linear or branched C₁-C₄ alkyls; or
 - R₄ represents a hydrogen atom and R₅ represents a
 - 15 1,1-dimethyl-3-oxobutyl group;
- and salts thereof.

14. Composition according to any one of the preceding claims, characterized in that the non-acidic acrylic monomer is selected from methyl (meth)acrylate,

20 ethyl (meth)acrylate, propyl (meth)acrylate, butyl (meth)acrylate and isobutyl (meth)acrylate; methoxyethyl (meth)acrylate; ethoxyethyl (meth)acrylate; trifluoroethyl methacrylate; dimethylaminoethyl methacrylate, diethylaminoethyl

25 methacrylate, 2-hydroxypropyl (meth)acrylate,

2-hydroxyethyl (meth)acrylate; dimethylaminopropylmethacrylamide; and the salts thereof.

15. Composition according to any one of the preceding claims, characterized in that the non-acidic
5 acrylic monomer is selected from methyl acrylate, methoxyethyl acrylate, methyl methacrylate, 2-hydroxyethyl methacrylate, dimethylaminoethyl methacrylate, and mixtures thereof.

16. Composition according to any one of the
10 preceding claims, characterized in that the non-acidic acrylic monomer is selected from C₁-C₃ alkyl (meth)acrylates.

17. Composition according to any one of the preceding claims, characterized in that the grafted
15 acrylic polymer does not contain an additional, non-acrylic, vinyl monomer.

18. Composition according to any one of Claims 1 to 16, characterized in that the grafted acrylic polymer is obtainable by polymerization in the
20 presence of one or more additional, non-acidic, non-acrylic, vinyl monomers.

19. Composition according to the preceding claim, characterized in that the non-acidic, non-acrylic, additional vinyl monomers are selected
25 from:

- vinyl esters of formula: $R_6\text{-COO-CH=CH}_2$

in which R₆ represents a linear or branched alkyl group

containing from 1 to 6 carbon atoms, or a cyclic alkyl group containing from 3 to 6 carbon atoms and/or an aromatic group, for example of benzene, anthracene or naphthalene type;

- 5 - non-acidic non-acrylic vinyl monomers comprising at least one tertiary amine function, such as 2-vinylpyridine or 4-vinylpyridine;
- and mixtures thereof.

20. Composition according to any one of
10 Claims 17 to 19, characterized in that the grafted polymer contains from 50% to 100% by weight, preferably from 60% to 100% by weight, preferentially from 70% to 100% by weight of acrylic monomers relative to the total weight of the mixture of acrylic monomers +
15 optional non-acrylic vinyl monomers.

21. Composition according to any one of the preceding claims, characterized in that the macromonomer comprises at one of the ends of the chain a polymerizable end group selected from a vinyl group
20 or a (meth)acrylate group, and preferably a (meth)acrylate group.

22. Composition according to any one of the preceding claims, characterized in that the macromonomer has a weight-average molecular mass of
25 greater than or equal to 300, preferentially greater than or equal to 500 and more preferentially greater than 600.

23. Composition according to any one of the preceding claims, characterized in that the macromonomer has a weight-average molecular mass (M_w) ranging from 200 to 100 000, preferably ranging from 500 to 50 000, preferentially ranging from 800 to 20 000, more preferentially ranging from 800 to 10 000 and even more preferentially ranging from 800 to 6000.

24. Composition according to any one of the preceding claims, characterized in that the polymerized macromonomer represents from 0.1% to 15% by weight of the total weight of the polymer, preferably from 0.2% to 10% by weight and preferentially from 0.3% to 8% by weight.

25. Composition according to any one of the preceding claims, characterized in that the liquid fatty phase comprises a liquid organic compound selected from:

- liquid organic compounds having a global solubility parameter according to the Hansen solubility space of less than or equal to $18 \text{ (MPa)}^{1/2}$ and preferably less than or equal to $17 \text{ (MPa)}^{1/2}$;
- monoalcohols having a global solubility parameter according to the Hansen solubility space of less than or equal to $20 \text{ (MPa)}^{1/2}$; and
- mixtures thereof.

26. Composition according to any one of the preceding claims, characterized in that the liquid

fatty phase comprises a volatile oil.

27. Composition according to any one of the preceding claims, characterized in that the liquid fatty phase is a non-silicone-based liquid fatty phase.

5 28. Composition according to the preceding claim, characterized in that the non-silicone-based liquid fatty phase is composed of at least 50% by weight of at least one non-silicone-based organic liquid compound selected from:

- 10 - non-silicone-based organic liquid compounds having a global solubility parameter according to the Hansen solubility space of less than or equal to $18 \text{ (MPa)}^{1/2}$;
- liquid monoalcohols having a global solubility parameter according to the Hansen solubility space of
15 less than or equal to $20 \text{ (MPa)}^{1/2}$; and
- mixtures thereof.

29. Composition according to Claim 27 or 28, characterized in that the non-silicone-based liquid fatty phase contains less than 50% by weight of
20 silicone-based liquid organic compounds having a global solubility parameter according to the Hansen solubility space of less than or equal to $18 \text{ (MPa)}^{1/2}$.

30. Composition according to Claim 27 or 28, characterized in that the non-silicone-based liquid
25 fatty phase contains no silicone-based liquid organic compounds.

31. Composition according to any one of

Claims 27 to 30, characterized in that the macromonomer is a carbon-based macromonomer.

32. Composition according to the preceding claim, characterized in that the carbon-based
5 macromonomer is selected from:

- (i) homopolymers and copolymers of linear or branched C_8 - C_{22} alkyl acrylate or methacrylate, containing a polymerizable end group selected from vinyl or (meth)acrylate groups;
- 10 - (ii) polyolefins containing a polymerizable ethylenically unsaturated end group.

33. Composition according to Claim 31 or 32, characterized in that the carbon-based macromonomer is selected from:

- 15 - (i) poly(2-ethylhexyl acrylate) macromonomers with a mono(meth)acrylate end group; poly(dodecyl acrylate) macromonomers with a mono(meth)acrylate end group; poly(dodecyl methacrylate) macromonomers; poly(stearyl acrylate) macromonomers with a mono(meth)acrylate end
20 group; and poly(stearyl methacrylate) macromonomers with a mono(meth)acrylate end group;
- (ii) polyethylene macromonomers, polypropylene macromonomers, macromonomers of polyethylene/polypropylene copolymer, macromonomers of polyethylene/
25 polybutylene copolymer, polyisobutylene macromonomers, polybutadiene macromonomers, polyisoprene macromonomers, polybutadiene macromonomers;

poly(ethylene/butylene)polyisoprene macromonomers,
these macromonomers having a (meth)acrylate end group.

34. Composition according to any one of
Claims 31 to 33, characterized in that the carbon-based
5 macromonomer is selected from:

- (i) poly(2-ethylhexyl acrylate) macromonomers with a
mono(meth)acrylate end group, and poly(dodecyl
acrylate) macromonomers with a mono(meth)acrylate end
group;
- 10 - (ii) poly(ethylene/butylene) methacrylate.

35. Composition according to any one of
Claims 31 to 34, characterized in that the grafted
polymer is selected from the polymers obtained by
polymerization:

- 15 - of methyl acrylate/acrylic acid monomers and of a
polyethylene/polybutylene macromonomer with a
methacrylate end group, in particular in isododecane.

36. Composition according to any one of
Claims 27 to 35, characterized in that the grafted
20 polymer is a non-silicone-based grafted polymer.

37. Composition according to the preceding
claim, characterized in that the non-silicone-based
grafted polymer contains predominantly a carbon-based
macromonomer which optionally contains not more than 7%
25 by weight of silicone-based macromonomer, relative to
the total weight of the polymer.

38. Composition according to Claim 36 or 37,

characterized in that the silicone-based grafted polymer is free from carbon-based macromonomer.

39. Composition according to any one of Claims 1 to 26, characterized in that the liquid fatty phase is a silicone-based liquid fatty phase.

40. Composition according to the preceding claim, characterized in that the silicone-based liquid fatty phase is composed of at least 50% by weight of at least one silicone-based organic liquid compound selected from silicone-based organic liquid compounds having a global solubility parameter according to the Hansen solubility space of less than or equal to $18 \text{ (MPa)}^{1/2}$.

41. Composition according to Claim 29 or 40, characterized in that the silicone-based organic liquid compound comprises a volatile silicone oil.

42. Composition according to the preceding claim, characterized in that the volatile silicone oil is selected from octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, dodecamethylcyclohexasiloxane, heptamethylhexyltrisiloxane, heptamethyloctyltrisiloxane, octamethyltrisiloxane, decamethyltetrasiloxane, and mixtures thereof.

43. Composition according to Claim 29 or 40, characterized in that the silicone-based organic liquid compound comprises a non-volatile silicone oil.

44. Composition according to the preceding

claim, characterized in that the non-volatile silicone oil is selected from non-volatile polydialkylsiloxanes; polydimethylsiloxanes containing alkyl, alkoxy or phenyl groups, which are pendent or at the end of a
5 silicone chain, these groups containing from 2 to 24 carbon atoms; phenyl silicones; polysiloxanes modified with fatty acids (especially of C₈-C₂₀), fatty alcohols (especially of C₈-C₂₀) or polyoxyalkylenes (especially polyoxyethylene and/or polyoxypropylene); amino
10 polysiloxanes; polysiloxanes containing hydroxyl groups; fluoro polysiloxanes comprising a fluorinated group that is pendent or at the end of a silicone chain, containing from 1 to 12 carbon atoms, all or some of the hydrogens of which are substituted by
15 fluorine atoms; and mixtures thereof.

45. Composition according to any one of Claims 39 to 44, characterized in that the liquid fatty phase contains less than 50% by weight of non-silicone-based liquid organic compounds.

20 46. Composition according to Claim 28 or 45, characterized in that the non-silicone-based liquid organic compound is selected from non-silicone-based liquid organic compounds having a global solubility parameter according to the Hansen solubility space of
25 less than 18 (MPa)^{1/2}; liquid monoalcohols having a global solubility parameter according to the Hansen solubility space of less than or equal to 20 (MPa)^{1/2};

and mixtures thereof.

47. Composition according to Claim 28 or 46, characterized in that the non-silicone-based organic liquid compound having a global solubility parameter according to the Hansen solubility space of less than or equal to 18 (MPa)^{1/2} is selected from carbon-based, hydrocarbon-based and fluoro oils, alone or in a mixture; linear, branched and/or cyclic alkanes, optionally volatile; esters, and especially linear, branched or cyclic esters having at least 6 carbon atoms; ketones, and especially ketones having at least 6 carbon atoms; and ethers, and especially ethers having at least 6 carbon atoms.

48. Composition according to Claim 28 or 46, characterized in that the monoalcohols having a global solubility parameter according to the Hansen solubility space of less than or equal to 20 (MPa)^{1/2} are selected from aliphatic fatty monoalcohols having 6 to 30 carbon atoms, the hydrocarbon chain containing no substitution group, and especially oleyl alcohol, decanol and linoleyl alcohol.

49. Composition according to Claim 28 and 47, 49, characterized in that the liquid fatty phase contains a non-silicone-based volatile oil.

50. Composition according to the preceding claim, characterized in that the non-silicone-based volatile oil is selected from isododecane, isodecane

and isohexadecane.

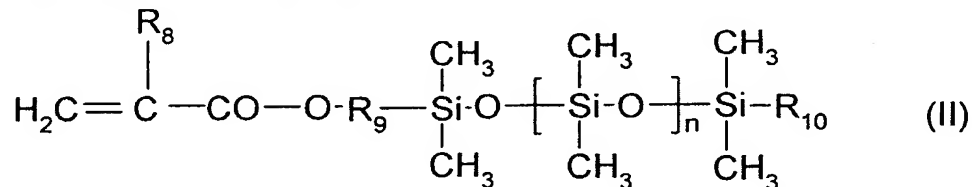
51. Composition according to any one of Claims 39 to 50, characterized in that the liquid fatty phase contains no non-silicone-based liquid organic compounds.

52. Composition according to any one of Claims 39 to 51, characterized in that the macromonomer is a silicone-based macromonomer.

53. Composition according to the preceding claim, characterized in that the silicone-based macromonomer is an organopolysiloxane macromonomer, and preferably a polydimethylsiloxane macromonomer.

54. Composition according to Claim 40 or 41, characterized in that the macromonomer is selected from polydimethylsiloxanes with a mono(meth)acrylate end group, and especially monomethacryloyloxypropyl polydimethylsiloxanes.

55. Composition according to any one of Claims 52 to 54, characterized in that the silicone-based macromonomer is selected from the macromonomers of formula (II) below:



in which R₈ denotes a hydrogen atom or a methyl group; R₉ denotes a divalent hydrocarbon-based group having 1 to 10 carbon atoms and optionally contains one or two

ether bonds -O-; R_{10} denotes an alkyl group having 1 to 10 carbon atoms, in particular 2 to 8 carbon atoms; n denotes an integer ranging from 1 to 300, preferably ranging from 3 to 200 and preferentially ranging from 5 to 100.

56. Composition according to any one of Claims 39 to 55, characterized in that the grafted polymer is selected from the polymers obtained by polymerizing:

10 - methyl acrylate, acrylic acid and monomethacryloyloxypropyl polydimethylsiloxane macromonomer having a weight-average molecular weight ranging from 800 to 6000, in particular in decamethylcyclopentasiloxane or phenyltrimethicone.

15 57. Composition according to any one of Claims 39 to 56, characterized in that the grafted polymer is a silicone-based grafted polymer.

58. Composition according to the preceding claim, characterized in that the silicone-based grafted
20 polymer contains predominantly a silicone-based macromonomer which contains optionally not more than 7% by weight of carbon-based macromonomer, based on the total weight of the polymer.

59. Composition according to Claim 57 or 58,
25 characterized in that the silicone-based grafted polymer is free from carbon-based macromonomer.

60. Composition according to any one of the

preceding claims, characterized in that the grafted polymer has a weight-average molecular mass (Mw) of between 10 000 and 300 000, in particular between 20 000 and 200 000, better still between 25 000 and 150 000.

61. Composition according to any one of the preceding claims, characterized in that the particles of grafted polymer have an average size ranging from 10 to 400 nm, preferably ranging from 20 to 200 nm.

62. Composition according to any one of the preceding claims, characterized in that the grafted acrylic polymer is a film-forming polymer.

63. Composition according to any one of the preceding claims, characterized in that the grafted polymer is present in an amount ranging from 0.1% to 70% by weight, relative to the total weight of the composition, preferably ranging from 0.5% to 50% by weight and preferentially ranging from 1% to 40% by weight.

64. Composition according to any one of the preceding claims, characterized in that it comprises at least one fatty substance which is solid at ambient temperature and is selected from waxes, pasty fats, gums and mixtures thereof.

65. Composition according to any one of the preceding claims, characterized in that it contains from 0.1% to 50% by weight of waxes, relative to the

total weight of the composition, and preferably from 1% to 30% by weight.

66. Composition according to any one of the preceding claims, characterized in that it comprises a
5 colorant.

67. Composition according to the preceding claim, characterized in that the colorant is a pulverulent colorant, selected in particular from pigments and nacres.

10 68. Cosmetic composition according to any one of the preceding claims, characterized in that it is in anhydrous form.

69. Composition according to any one of the preceding claims, characterized in that it comprises a
15 cosmetic ingredient selected from vitamins, moisturizers, thickeners, trace elements, softeners, sequesterants, perfumes, alkalifying or acidifying agents, preservatives, plasticizers, sunscreens, surfactants, antioxidants, hair loss preventatives,
20 anti-dandruff agents, propellants or mixtures thereof.

70. Cosmetic composition according to any one of the preceding claims, characterized in that it is in the form of a suspension, dispersion, solution, gel, emulsion, especially oil-in-water (O/W) or water-in-oil (W/O), or multiple (W/O/W or polyol/O/W or
25 O/W/O) emulsion, in the form of a cream, paste, mousse, vesicle dispersion, in particular of ionic or nonionic

lipids, or in the form of a two-phase or multiphase lotion, or spray, powder or paste.

71. Cosmetic composition according to any one of the preceding claims, characterized in that it is in anhydrous form.

72. Cosmetic composition according to any one of the preceding claims, characterized in that it is a composition for making up or caring for keratin materials.

73. Cosmetic composition comprising a dispersion of particles of grafted acrylic polymer in a liquid fatty phase according to any one of Claims 1 to 63, and at least one colorant, especially pigments, nacles, or any other filler having an optical effect.

74. Cosmetic assembly comprising:
a) a container delimiting at least one compartment, the said container being closed by a closing member; and
b) a composition disposed within the said compartment, the composition being in accordance with any one of the preceding claims.

75. Cosmetic assembly according to the preceding claim, characterized in that the container is formed at least partly of at least one thermoplastic material.

76. Cosmetic assembly according to Claim 74, characterized in that the container is formed at least partly of at least one non-thermoplastic material, in

particular of glass or of metal.

77. Assembly according to any one of Claims 74 to 76, characterized in that, with the container in its closed position, the closing member is
5 screwed onto the container.

78. Assembly according to any one of Claims 74 to 76, characterized in that, with the container in its closed position, the closing member is coupled with the container other than by screwing, in
10 particular by snap-fastening, adhesive bonding or welding.

79. Assembly according to any one of Claims 74 to 78, characterized in that the composition is substantially at atmospheric pressure within the
15 compartment.

80. Assembly according to any one of Claims 74 to 78, characterized in that the composition is pressurized within the container.

81. Cosmetic method of making up or caring
20 for the skin, comprising applying to the skin a cosmetic composition according to one of Claims 1 to 73.

82. Use of a composition according to one of Claims 1 to 73 for obtaining a deposit, in particular a
25 makeup deposit, on keratin materials that has good transfer resistance, especially in the presence of sebum or perspiration or water.

83. Use, in a cosmetic composition, of a dispersion of particles of a grafted acrylic polymer in dispersion in a liquid fatty phase, the said grafted polymer being obtainable by polymerizing at least one
5 acidic ethylenic monomer, at least one non-acidic acrylic monomer and at least one macromonomer, for obtaining a deposit, in particular a makeup deposit, on keratin materials that exhibits good transfer resistance, especially in the presence of sebum or
10 perspiration or water.